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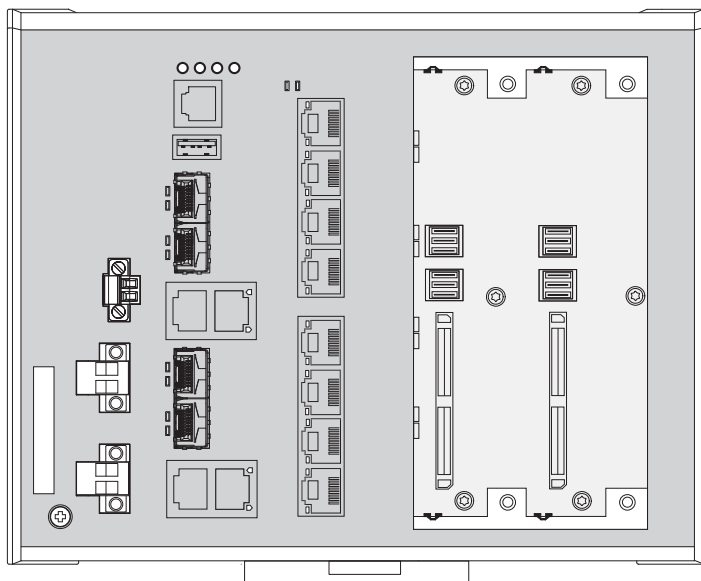
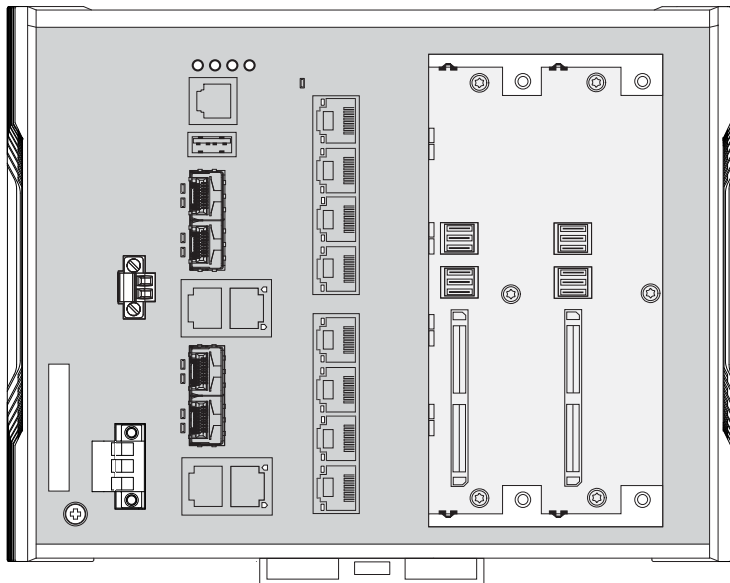
A **BELDEN** BRAND

User Manual

Installation

Industrial Ethernet Rail Switch Power Enhanced

RSPE 30/32/35/37



040045001080814000

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You can get the latest version of this manual on the Internet at the Hirschmann product site (www.hirschmann.com).

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Safety instructions

■ General safety instructions

You operate this device with electricity. The proper and safe operation of this device depends on proper handling during transportation, proper storage and assembly, and conscientious operation and maintenance procedures. Improper use of this device is associated with the risk of personal injury or property damage.

- ☐ Read this documentation as well as the safety instructions and warnings before connecting any cables.
- ☐ Never start operation with damaged components.
- ☐ The device does not contain any service components. If the device is not functioning correctly, or if it is damaged, turn off the power supply and return the device to Hirschmann for inspection.



WARNING

UNCONTROLLED MACHINE ACTIONS

To avoid uncontrolled machine actions caused by data loss, configure all the data transmission devices individually.

Before you start any machine which is controlled via data transmission, be sure to complete the configuration of all data transmission devices.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

■ Qualification requirements for personnel

- ☐ Only allow qualified personnel to work on the device.

Qualified personnel have the following characteristics:

- ▶ Qualified personnel are properly trained. Training as well as practical knowledge and experience make up their qualifications. This is the prerequisite for grounding and labeling circuits, devices, and systems in accordance with current standards in safety technology.
- ▶ Qualified personnel are aware of the dangers that exist in their work.
- ▶ Qualified personnel are familiar with appropriate measures against these hazards in order to reduce the risk for themselves and others.
- ▶ Qualified personnel receive training on a regular basis.

■ Certified usage

- ☐ Use the device solely for the application cases described in the Hirschmann product information, including this manual.
Operate the device solely according to the technical specifications.
[See "Technical data" on page 49.](#)

■ **National and international safety regulations**

- ☐ Verify that the electrical installation meets local or nationally applicable safety regulations.

■ **Grounding the device**

Grounding the device is by means of a separate ground connection on the device.

- ☐ Ground the device before connecting any other cables.
- ☐ Disconnect the grounding only after disconnecting all other cables.

The overall shield of a connected shielded twisted pair cable is connected to the ground connector on the front panel as a conductor.

■ **Working voltage**

The working voltage is connected to the chassis through protective elements exclusively.

- ☐ Connect only a working voltage that corresponds to the type plate of your device.
- ☐ Only for device variants featuring working voltage with the characteristic value K9 or KK:

[See “Device name and product code” on page 13.](#)

Every time you connect the electrical conductors, make sure that the following requirements are met:

- ▶ The power supply conforms to overvoltage category I or II.
- ▶ The power supply has an easily accessible disconnecting device (e.g., a switch or a plug). This disconnecting device is clearly identified. So in the case of an emergency, it is clear which disconnecting device belongs to which power supply cable.
- ▶ The electrical wires are voltage-free.
- ▶ Supply with DC voltage:
A fuse suitable for DC voltage is located in the plus conductor of the power supply.
The minus conductor is on ground potential. Otherwise, a fuse is also located in the minus conductor.
Regarding the properties of this fuse: [See “General technical data” on page 49.](#)
- ▶ Supply with AC voltage:
A fuse is located in the outer conductor of the power supply.
The neutral conductor is on ground potential. Otherwise, a fuse is also located in the neutral conductor.
Regarding the properties of this fuse: [See “General technical data” on page 49.](#)
- ▶ Supply with AC voltage:
The wire diameter of the power supply cable is at least 0.75 mm² (North America: AWG18) on the working voltage input.

- ▶ Supply with DC voltage:
The wire diameter of the power supply cable is at least 1 mm² (North America: AWG16) on the working voltage input.
- ▶ The cross-section of the protective conductor is the same size as or bigger than the cross-section of the power supply cables.
- ▶ The power supply cables used are permitted for the temperature range required by the application case.
- ▶ Relevant for North America:
The power cords are suitable for ambient air temperatures of at least 167 °F (75 °C). The power cord wires are made of copper.

Start connecting the electrical wires only if **all** the above safety requirements are fulfilled.

- Only for device variants featuring working voltage with the characteristic value C or PP:

[See “Device name and product code” on page 13.](#)

Every time you connect the electrical conductors, make sure that the following requirements are met:

- ▶ Solely for device variants with the characteristic value CC for the working voltage:
The power supply is Class 2 compliant.
- ▶ The power supply conforms to overvoltage category I or II.
- ▶ The working voltage inputs are designed for operation with safety extra-low voltage. Connect only SELV circuits with voltage restrictions in line with IEC/EN 60950-1 to the working voltage connections.
- ▶ The power supply has an easily accessible disconnecting device (e.g., a switch or a plug). This disconnecting device is clearly identified. So in the case of an emergency, it is clear which disconnecting device belongs to which power supply cable.
- ▶ The electrical wires are voltage-free.
- ▶ A fuse suitable for DC voltage is located in the plus conductor of the power supply.
The minus conductor is on ground potential. Otherwise, a fuse is also located in the minus conductor.
Regarding the properties of this fuse: [See “General technical data” on page 49.](#)
- ▶ The wire diameter of the power supply cable is at least 1 mm² (North America: AWG16) on the working voltage input.
- ▶ The cross-section of the ground conductor is the same size as or bigger than the cross-section of the power supply cables.

- ▶ The power supply cables used are permitted for the temperature range required by the application case.
- ▶ Relevant for North America:
The power cords are suitable for ambient air temperatures of at least 167 °F (75 °C). The power cord wires are made of copper.

Start connecting the electrical wires only if **all** the above safety requirements are fulfilled.

- ☐ Internal fuses are triggered solely in the case of a detected error in the device. In case of damage or malfunction of the device, turn off the working voltage and return the device to the plant for inspection.
- ☐ For operating voltage connections with a protective conductor connection: connect the protective conductor before connecting the conductors for the operating voltage.
- ☐ Only switch on the operating voltage for the device when the following requirements are fulfilled:
 - ▶ The housing is closed
 - ▶ The terminal blocks are wired correctly
 - ▶ The terminal blocks for the operating supply are connected

■ **Signal contact**

For the signal contact to be connected, make sure the following requirements are met:

- ▶ The device is grounded.
- ▶ The signal contact connection wires are voltage-free.
- ▶ The connected voltage is limited by a current limitation device or a fuse.

Observe the electrical threshold values for the signal contact.

[See “General technical data” on page 49.](#)

Start connecting the signal contact solely if **all** the above requirements are fulfilled.

■ **Installation site requirements**

- ☐ Install the device in a fire protected enclosure according to EN 60950-1.
- ☐ Only for device variants featuring working voltage with the characteristic value K9 or KK:

[See “Device name and product code” on page 13.](#)

Install this device solely in a switch cabinet or in an operating site with restricted access, to which maintenance staff have exclusive access.

■ Housing

Only technicians authorized by the manufacturer are permitted to open the housing.

- ☐ Never insert pointed objects (narrow screwdrivers, wires, etc.) into the device or into the connection terminals for electric conductors. Do not touch the connection terminals.
- ☐ Keep the ventilation slits free to ensure good air circulation.
- ☐ Install the device in the vertical position.
- ☐ At ambient temperatures > 140 °F (60 °C):
The surfaces of the device housing may become hot. Avoid touching the device while it is operating.

■ CE marking

The labeled devices comply with the regulations contained in the following European directive(s):

| Device variant | Directive |
|--|--|
| All variants | 2004/108/EC (EMC) Directive of the European Parliament and the council for standardizing the regulations of member states with regard to electromagnetic compatibility. 2011/65/EU (RoHS) Directive of the European Parliament and of the Council on the restriction of the use of certain hazardous substances in electrical and electronic equipment. |
| Only for device variants featuring working voltage with the characteristic value K9 or KK: | 2006/95/EC Directive of the European Parliament and the council for standardizing the regulations of member states with regard to electrical equipment to be used within specific voltage ranges. |

In accordance with the above-named EU directive(s), the EU conformity declaration will be at the disposal of the relevant authorities at the following address:

Hirschmann Automation and Control GmbH
Stuttgarter Str. 45-51
72654 Neckartenzlingen
Germany
Tel.: +49 1805 141538

The product can be used in the industrial sector.

- ▶ Interference immunity: EN 61000-6-2
- ▶ Emitted interference: EN 55022
- ▶ Reliability: EN 60950-1

You find more information on technical and industry standards here:

[“Technical data” on page 49](#)

Warning! This is a class A device. This device can cause interference in living areas, and in this case the operator may be required to take appropriate measures.

Note: The assembly guidelines provided in these instructions must be strictly adhered to in order to observe the EMC threshold values.

■ **LED or laser components**

LED or LASER components according to IEC 60825-1 (2007):

CLASS 1 LASER PRODUCT

CLASS 1 LED PRODUCT

Note: You will find additional warning and safety information in the “User Manual Installation RSPE 30/32/35/37” supplied with every RSPE 30/32/35/37 device.

■ **FCC note:**

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference; (2) this device must accept any interference received, including interference that may cause undesired operation.

Appropriate testing has established that this device fulfills the requirements of a class A digital device in line with part 15 of the FCC regulations.

These requirements are designed to provide sufficient protection against interference when the device is being used in a business environment.

The device creates and uses high frequencies and can also radiate these frequencies. If it is not installed and used in accordance with this operating manual, it can cause radio transmission interference. The use of this device in a residential area can also cause interference, and in this case the user is obliged to cover the costs of removing the interference.

■ **Recycling note**

After usage, this device must be disposed of properly as electronic waste, in accordance with the current disposal regulations of your county, state, and country.

About this manual

The “Installation” user manual contains a device description, safety instructions, a description of the display, and the other information that you need to install the device.

The following manuals are available as PDF files on the CD/DVD supplied:

- ▶ Installation user manual
- ▶ Basic Configuration user manual
- ▶ Redundancy Configuration user manual
- ▶ Reference manual for the graphical user interface
- ▶ Command Line Interface user manual

The Industrial HiVision network management software provides you with additional options for smooth configuration and monitoring:

- ▶ ActiveX control for SCADA integration
- ▶ Auto-topology discovery
- ▶ Browser interface
- ▶ Client/server structure
- ▶ Event handling
- ▶ Event log
- ▶ Simultaneous configuration of multiple devices
- ▶ Graphical user interface with network layout
- ▶ SNMP/OPC gateway

Key

The symbols used in this manual have the following meanings:

| | |
|---|------------|
| ▶ | Listing |
| □ | Work step |
| ■ | Subheading |

1 Description

1.1 General description

You can choose from between a wide range of variants. You have the option to set up your device individually based on different criteria:

- ▶ Support of PoE and PoE+
- ▶ Temperature range
- ▶ Working voltage range
- ▶ Certifications
- ▶ Redundancy functions

The RSPE 30/32/35/37 devices are designed for the special requirements of industrial automation. They meet the relevant industry standards, provide very high operational reliability, even under extreme conditions, and also long-term reliability and flexibility.

The devices work without a fan.

The device is mounted by latching in place on a hat rail.

You have the option of choosing various media to connect to the terminal devices and other network components:

- ▶ Multimode optical fiber
- ▶ Singlemode optical fiber
- ▶ Twisted pair cable

By using media modules, you obtain up to 16 additional Fast Ethernet ports. You will find more information on the media modules in the “User Manual for Installation of RSPM”.

The redundancy concept allows the network to be reconfigured quickly.

There are convenient options for managing the device. Administer your devices via:

- ▶ a Web browser
- ▶ SSH
- ▶ Telnet
- ▶ HiDiscovery (Software for putting the device into operation)
- ▶ Network management software (e.g. Industrial HiVision)
- ▶ a V.24 interface (locally on the device)

The devices provide you with a large range of functions, which the manuals for the operating software inform you about. You will find these manuals as PDF files on the enclosed CD/DVD, or you can download them from the Internet on the Hirschmann product pages (www.hirschmann.com).

The Hirschmann network components help you ensure continuous communication across all levels of the company.

1.2 Device name and product code

The device name corresponds to the product code. The product code is made up of characteristics with defined positions. The characteristic values stand for specific product properties.

| Item | Characteristic | Characteristic value | Description |
|-----------|---|----------------------|---|
| 1 ... 4 | Product | RSPE | Rail Switch Power Enhanced |
| 5 | Data rate | 3 | 10/100 Mbit/s and 10/100/1000 Mbit/s |
| 6 | Hardware type | 0 | Standard |
| | | 2 | Standard with PoE and PoE+ |
| | | 5 | Extended redundancy |
| | | 7 | Extended redundancy with PoE and PoE+ |
| 7 | (hyphen) | — | |
| 8 ... 9 | Number: 10 ^a /100 Mbit/s ports | 24 | 24 × |
| 10 ... 11 | Number: 10 ^a /100/1000 Mbit/s ports | 04 | 4 × |
| 12 ... 14 | Configuration of the uplink ports | 407 | 4 × Combo port for 10 ^a /100/1000 Mbit/s connections |
| 15 ... 17 | Configuration of the other ports | T | 8 × RJ45 socket for 10/100 Mbit/s twisted pair connections |
| | | 99 | 2 × free slot for media module |
| 18 | (hyphen) | — | |
| 19 | Temperature range | S | Standard 0 °C ... +60 °C (+32 °F ... +140 °F) |
| | | T | Extended −40 °F ... +158 °F (−40 °C ... +70 °C) |
| | | E | Extended with con- formal coating −40 °F ... +158 °F (−40 °C ... +70 °C) |

Table 1: Device name and product code



| Item | Characteristic | Character- istic value | Description |
|-----------|-------------------------------|--|---|
| 20 ... 21 | Working voltage | CC | 2 voltage inputs for redundant power supply Rated voltage range DC 24 V ... 48 V |
| | | K9 | 1 voltage input Rated voltage range AC 110 V ... 230 V, 50 Hz ... 60 Hz Rated voltage range DC 60 V ... 250 V |
| | | KK | 2 voltage inputs for redundant power supply Rated voltage range AC 110 V ... 230 V, 50 Hz ... 60 Hz Rated voltage range DC 60 V ... 250 V |
| | | PP | PoE 2 voltage inputs for redundant power supply |
| | | |  Rated voltage range DC 47 V... 57 V |
| | | | PoE+ 2 voltage inputs for redundant power supply |
| | | |  Rated voltage range DC 53 V... 57 V |
| | | | |
| | | | |
| | | | |
| 22 ... 23 | Certificates and declarations | You will find detailed information on the certificates and declarations applying to your device in a separate overview. See table 2 on page 15. | |
| 24 ... 25 | Software packages | 99 | Reserved |
| 26 ... 27 | Customer-specific version | HH | Hirschmann Standard |
| 28 | Hardware configuration | S | Standard |
| | | M | Fast MRP |
| | | P | PRP |
| | | H | HSR |
| | | The following redundancy functions are interchangeable with each other: ► M ► P ► H | |
| 29 | Software configuration | E | Entry (without configuration) |
| 30 ... 31 | Software level | 2S | HiOS Layer 2 Standard |
| | | 2A | HiOS Layer 2 Advanced |
| | | 3S | HiOS Layer 3 Standard |
| 32 ... 36 | Software version | 03.1. | Software version 03.1 |
| | | XX.X. | Current software version |
| 37 ... 38 | Maintenance | 00 | Bugfix version 00 |
| | | XX | Current bugfix version |

Table 1: Device name and product code

a. Only for twisted pair connection

| Application case | Certificates and declarations | Characteristic value ^a | | | | | | | | | | | |
|----------------------------------|--------------------------------|-----------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|
| | | Z9 | Y9 | X9 | V9 | VY | VU | VT | U9 | UY | UT | T9 | TY |
| Standard applications | CE | X | X | X | X | X | X | X | X | X | X | X | X |
| | EN 60950-1 | X | X | X | X | X | X | X | X | X | X | X | X |
| | EN 61131-2 | X | X | X | X | X | X | X | X | X | X | X | X |
| | FCC | X | X | X | X | X | X | X | X | X | X | X | X |
| | ISA 12.12.01 – Class I, Div. 2 | | | | (X) | | | | | | | | |
| | UL 61010-1, UL 61010-2-210 | | (X) | (X) | | (X) | (X) | (X) | | (X) | | | (X) |
| | UL 60950-1 | | (x) | (x) | | (x) | (x) | (x) | | (x) | | | (x) |
| Substation applications | IEC 61850-3 | | | | X | X | X | X | | | | | |
| | IEEE 1613 | | | | X | X | X | X | | | | | |
| Navy applications | GL | | | | | | (X) | | (X) | (X) | (X) | | |
| Railway applications (trackside) | EN 50121-4 | | | | | | | X | | | X | X | X |

Table 2: Assignment: application cases, certificates and declarations, characteristic values

- a. X = Certificate or declaration present
 (X) = Certificate or declaration in preparation
 (x) = Certificate or declaration available upon request

| Position Description | |
|----------------------|--|
| 1...4 | Product: Rail Switch Power Enhanced |
| 5 | Data rate: 10/100 Mbit/s and 10/100/100 Mbit/s |
| 6 | Hardware type: Extended redundancy with PoE and PoE+ |
| 7 | — |
| 8...9 | Number of 10/100 Mbit/s ports: 24 |
| 10...11 | Number of 10/100/1000 Mbit/s ports: 4 |
| 12...14 | Configuration of uplink ports: 4 × Combo port for 10/100/1000 Mbit/s TP / F/O |
| 15...17 | Configuration of all other ports: 8 × RJ45 socket for 10/100 Mbit/s TP and 2 × free slot for media module |
| 18 | — |
| 19 | Temperature range: Standard: +32 °F ... +140 °F (0 °C ... +60 °C) |
| 20...21 | Working voltage: 2 voltage inputs, 24 V DC ... 48 V DC |
| 22...23 | Approvals and declarations: CE, EN 60950-1, EN 61131-2, FCC |
| 24...25 | Software package: reserved |
| 26...27 | Customer-specific version: Hirschmann Standard |
| 28 | Hardware configuration: HSR |
| 29 | Software configuration: Entry (without configuration) |
| 30...31 | Software level: HiOS Layer 2 Standard |
| 32...36 | Software version: current software version |
| 37...38 | Maintenance: current bugfix version |

Table 3: Sample product code RSPE37-24044O7T99-SCCZ999HHHE2SXX.X.XX

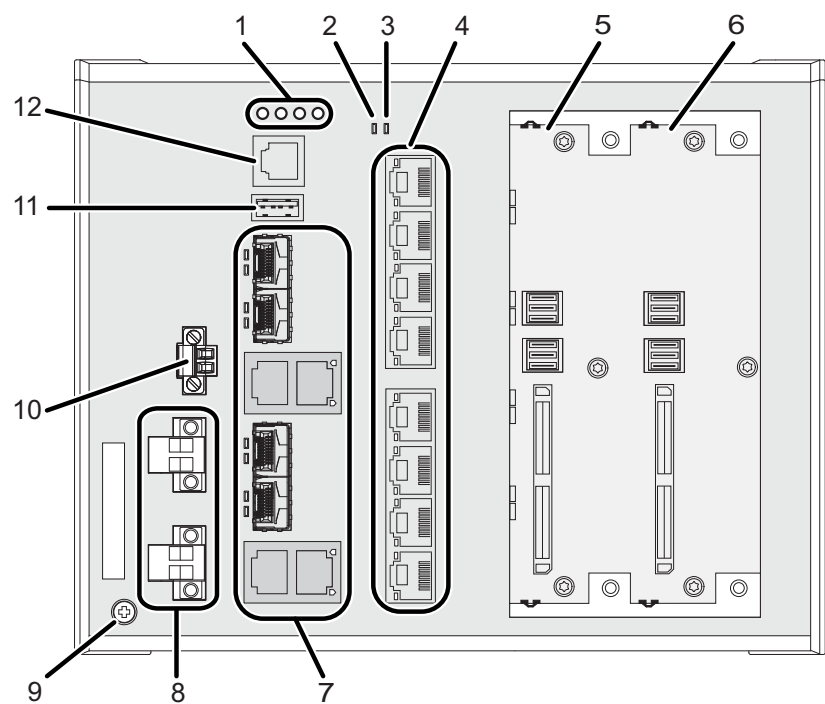
1.3 Combination options

| Item | 1 ... 4 | 5 ... 6 | 7 8 ... 9 | 10 ... 11 | 12 ... 14 | 15 ... 17 | 18 19 | 20 ... 21 | 22 ... 23 | 24 ... 25 | 26 ... 27 | 28 | 29 | 30 ... 31 | 32 ... 36 | 37 ... 38 |
|------------------------|---------|---------------------------|-----------------------------|--------------------------------|-----------------------------|----------------------------|-------------------|-----------------|--|-------------------|---------------------------|------------------------|------------------------|----------------|------------------|-------------|
| Product characteristic | Device | Data rate & hardware type | Number: Fast Ethernet ports | Number: Gigabit Ethernet ports | Config. of the uplink ports | Config. of the other ports | Temperature range | Working voltage | Approvals and self-declarations | Software packages | Customer-specific version | Hardware configuration | Software configuration | Software level | Software version | Maintenance |
| Attribute values | RSPE | 30 | – 24 | 04 | 407 | T99 | – S; T; E | CC; K9; KK | T9; TY; U9; UT; UY; V9; VT; VU; VY; X9; Y9; Z9 | 99 | HH | S | E | 2S; 2A; 3S | 03.1. | 00; XX |
| | RSPE | 32 | – 24 | 04 | 407 | T99 | – S; T; E | PP | T9; TY; U9; UT; UY; V9; VT; VU; VY; X9; Y9; Z9 | 99 | HH | S | E | 2S; 2A; 3S | 03.1. | 00; XX |
| | RSPE | 35 | – 24 | 04 | 407 | T99 | – S; T; E | CC; K9; KK | T9; TY; U9; UT; UY; V9; VT; VU; VY; X9; Y9; Z9 | 99 | HH | M; P; H | E | 2S; 2A; 3S | 03.1. | 00; XX |
| | RSPE | 37 | – 24 | 04 | 407 | T99 | – S; T; E | PP | T9; TY; U9; UT; UY; V9; VT; VU; VY; X9; Y9; Z9 | 99 | HH | M; P; H | E | 2S; 2A; 3S | 03.1. | 00; XX |

Table 4: Combination options of the RSPE 30/32/35/37 device variants

1.4 Device views

1.4.1 Front view

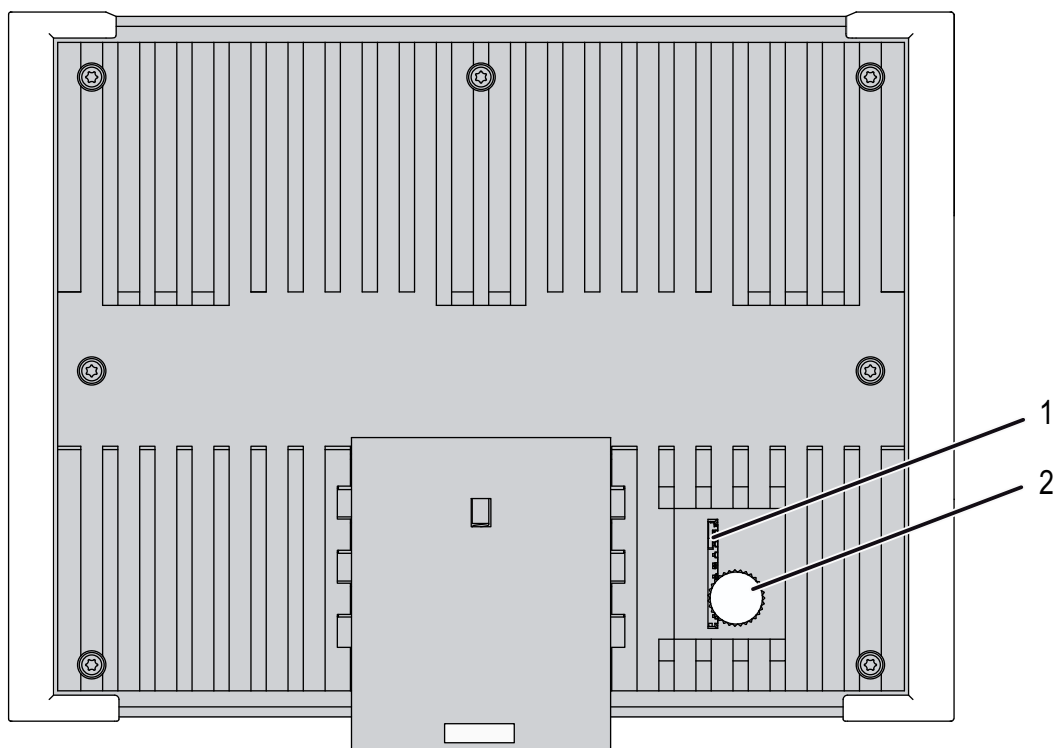


| | | | |
|----|---|--|---|
| 1 | LED display elements for device status | | |
| 2 | LED display element for media module status | | |
| 3 | only device variants RSPE 32 and RSPE 37: LED display element for media module status and PoE status | | |
| 4 | Media module with 8 × RJ45 socket for 10/100 Mbit/s twisted pair connections | | |
| 5 | Slot 1 for media module RSPM | | |
| 6 | Slot 2 for media module RSPM | | |
| 7 | 4 × Combo-Port for 10 ^a /100/1000 Mbit/s connections | | |
| 8 | Working voltage connection | | |
| | alternatively, depending on device variant | Operating voltage characteristic value: | CC ▶ 2 voltage inputs for redundant power supply ▶ 2-pin terminal block |
| | | Operating voltage characteristic value: | K9 ▶ 1 voltage input ▶ 3-pin terminal block |
| | | Operating voltage characteristic value: | KK ▶ 2 voltage inputs for redundant power supply ▶ 3-pin terminal block |
| | | Operating voltage characteristic value: | PP ▶ 2 voltage inputs for redundant power supply ▶ 2-pin terminal block |
| 9 | Grounding screw | | |
| 10 | Connection for the signal contact | | |
| 11 | USB interface | | |
| 12 | V.24 interface | | |

Table 5: Front view (using the example RSPE30-2404407T99-SCC...)

a. only for twisted pair connections

1.4.2 Rear view



-
- | | |
|---|----------------------|
| 1 | Slot for the SD card |
| 2 | Knurled screw |
-

1.5 Power supply

You will find information on the characteristic values here:

[“Device name and product code” on page 13](#)

1.5.1 Working voltage characteristic value K9

For the power supply of the device, a 3-pin terminal block is available.

For further information see [“Working voltage characteristic value K9” on page 37](#).

1.5.2 Working voltage with the characteristic value KK

For the redundant power supply of the device, two 3-pin terminal blocks are available.

For further information see [“Working voltage with the characteristic value KK” on page 38](#).

1.5.3 Working voltage characteristic value CC

For the redundant power supply of the device, two 2-pin terminal blocks are available.

For further information see [“Working voltage characteristic value CC” on page 39](#).

1.5.4 Working voltage with the characteristic value PP

For the redundant power supply of the device, two 2-pin terminal blocks are available.

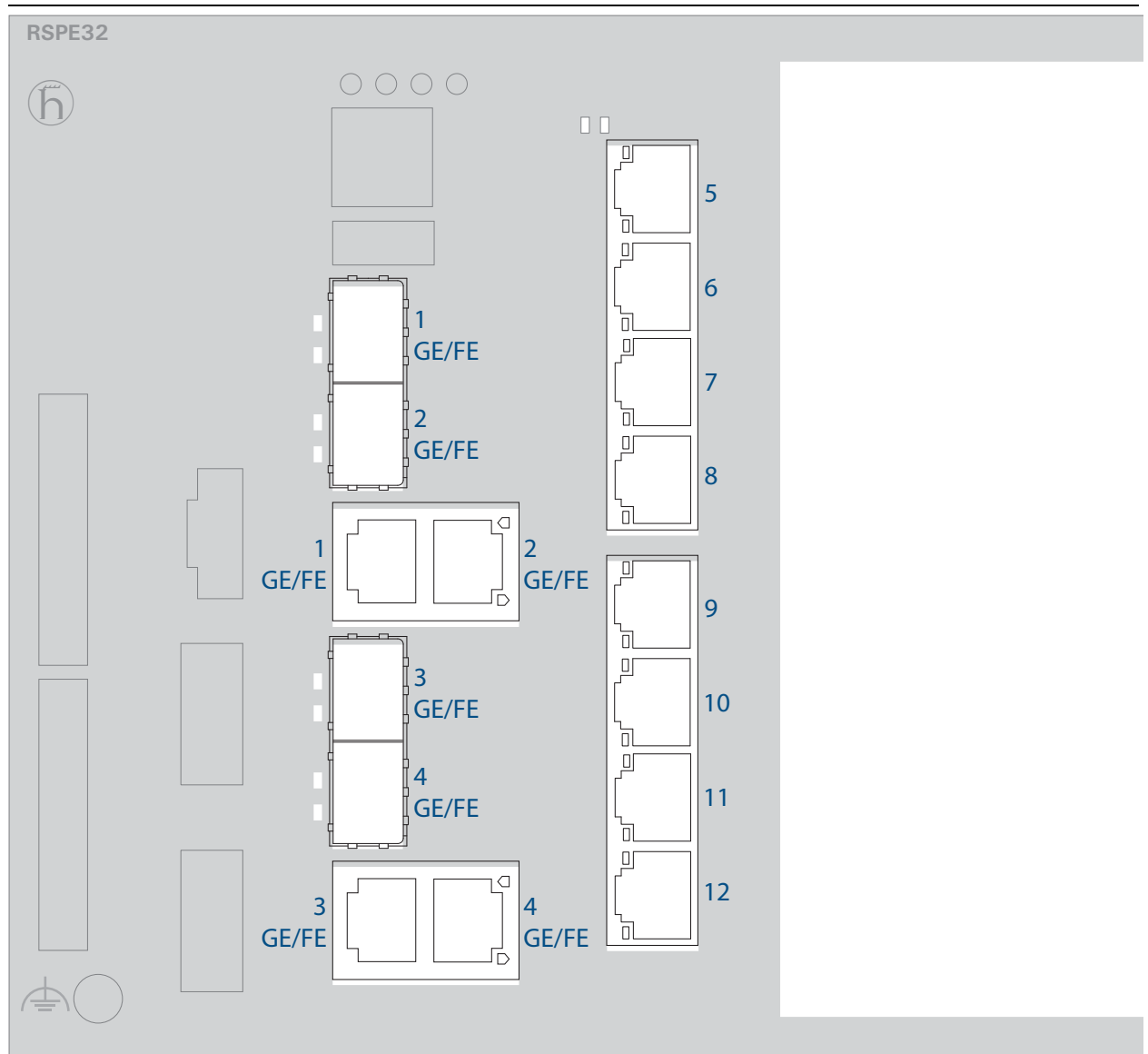
These device variants support Power over Ethernet Plus (PoE+).

Ensure that the external power supply unit you use to provide the PoE voltage fulfills the insulation requirements according to IEEE 802.3 (insulation resistance 48 V, output to the “rest of the world” 750 V DC for 60 seconds).

For further information see [“Working voltage with the characteristic value PP” on page 40](#).

1.6 Ethernet ports

You can connect end devices and other segments to the device ports using twisted pair cables or optical fibers (F/O).



| | |
|---------------|---|
| Port 1 GE/FE | Combo port 1 for Gigabit Ethernet and Fast Ethernet |
| Port 2 GE/FE | Combo port 2 for Gigabit Ethernet and Fast Ethernet |
| Port 3 GE/FE | Combo port 3 for Gigabit Ethernet and Fast Ethernet |
| Port 4 GE/FE | Combo port 4 for Gigabit Ethernet and Fast Ethernet |
| Ports 5 to 12 | Twisted pair port for Fast Ethernet |
| | PoE-capable for the device variants RSPE 35 and RSPE 37 |

Table 6: Arrangement of the Ethernet ports on the device

Note: By using media modules, you obtain up to 16 additional Fast Ethernet ports.

You will find more information on the media modules in the “User Manual for Installation of RSPM”.

1.6.1 Gigabit combo port

The RSPE 30/32/35/37 device provides 4 combo ports for transmission speeds of up to 1000 Mbit/s.

[See table 6 on page 21.](#)

You have the option of alternatively connecting a twisted pair cable via a RJ45 socket or an optical fiber via a SFP transceiver to a combo port.

You obtain appropriate SFP transceivers as an accessory.

[See “Accessories” on page 58.](#)

By inserting a SFP transceiver, you deactivate automatically the corresponding twisted pair interface.

| Media type | | Connection options | |
|--------------------|--------|--------------------|---|
| Twisted pair cable | | Technical standard | IEEE 802.3 10BASE-T/100BASE-TX/1000BASE-T |
| | | Connection type | RJ45 |
| Fiber optic cable | either | Technical standard | IEEE 802.3 100BASE-FX |
| | | Connection type | Fast Ethernet SFP transceiver |
| | or | Technical standard | IEEE 802.3 1000BASE-SX/LX |
| | | Connection type | 1 Gigabit Ethernet SFP transceiver |

Table 7: Combo ports: Connection options

■ 10/100/1000 Mbit/s twisted pair port

This port is an RJ45 socket.

The 10/100/1000 Mbit/s twisted pair port offers you the ability to connect network components according to the IEEE 802.3 10BASE-T/100BASE-TX/1000BASE-T standard.

This port supports:

- ▶ Autonegotiation
- ▶ Autopolarity
- ▶ Autocrossing (if autonegotiation is activated)
- ▶ 1000 Mbit/s full duplex
- ▶ 100 Mbit/s half-duplex mode, 100 Mbit/s full duplex mode
- ▶ 10 Mbit/s half-duplex mode, 10 Mbit/s full duplex mode

Delivery state: autonegotiation active

The socket housing is electrically connected with the front panel.

The pin assignment corresponds to MDI-X.

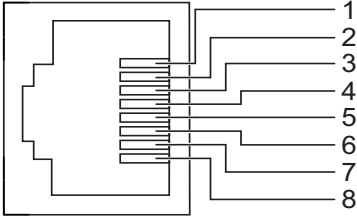
| | Pin | Function |
|---|-----|----------|
|  | 1 | BI_DB+ |
| | 2 | BI_DB- |
| | 3 | BI_DA+ |
| | 4 | BI_DD+ |
| | 5 | BI_DD- |
| | 6 | BI_DA- |
| | 7 | BI_DC+ |
| | 8 | BI_DC- |

Table 8: Pin assignment of the 10/100/1000 Mbit/s twisted pair port, RJ45 socket, 1000 Mbit/s mode, MDI-X mode

■ 100/1000 Mbit/s F/O port

This port is an SFP slot.

The 100/1000 Mbit/s F/O port offers you the ability to connect network components according to the IEEE 802.3 100BASE-FX/1000BASE-SX/1000BASE-LX standard.

This port supports:

- ▶ 1000 Mbit/s full duplex
- ▶ 100 Mbit/s half-duplex mode, 100 Mbit/s full duplex mode

State on delivery:

- ▶ 100 Mbit/s full duplex when using a Fast Ethernet SFP transceiver
- ▶ 1000 Mbit/s full duplex when using a Gigabit Ethernet SFP transceiver

1.6.2 10/100 Mbit/s twisted pair port

This port is an RJ45 socket.

[See table 6 on page 21.](#)

The 10/100 Mbit/s twisted pair port offers you the ability to connect network components according to the IEEE 802.3 10BASE-T/100BASE-TX standard.

This port supports:

- ▶ Autonegotiation
- ▶ Autopolarity
- ▶ Autocrossing (if autonegotiation is activated)
- ▶ 100 Mbit/s half-duplex mode, 100 Mbit/s full duplex mode
- ▶ 10 Mbit/s half-duplex mode, 10 Mbit/s full duplex mode

Delivery state: autonegotiation active

The socket housing is electrically connected with the front panel.

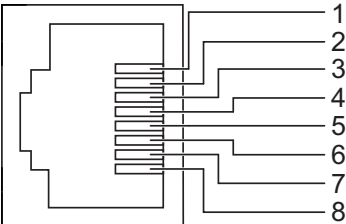
| | Pin | Function |
|---|---------|-----------------------|
|  | 1 | RD+ Receive path |
| | 2 | RD- Receive path |
| | 3 | TD+ Transmission path |
| | 4 | |
| | 5 | |
| | 6 | TD- Transmission path |
| | 7 | |
| | 8 | |
| | 4,5,7,8 | — |

Table 9: *Pin assignment of the 10/100 Mbit/ twisted pair port, RJ-45 socket, MDI-X mode*

1.6.3 100 Mbit/s F/O port (optional)

This port is an SFP slot.

This option is available to you, if you use a RSPM media module comprising F/O ports.

The 100 Mbit/s F/O port offers you the ability to connect network components according to the IEEE 802.3 100BASE-FX standard.

This port supports:

- 100 Mbit/s half-duplex mode, 100 Mbit/s full duplex mode

Default setting: Full duplex

Note: Insert the media module with 8 F/O ports only in the media module slot 2.

[See table 5 on page 18.](#)

You will find more information on the media modules in the “User Manual for Installation of RSPM”.

1.6.4 Support of PoE and PoE+

The device variants RSPE 32 and RSPE 37 support Power over Ethernet (PoE) and Power over Ethernet Plus (PoE+).

All Fast Ethernet ports are PoE-capable.

The Gigabit combo ports provide PoE support.

See [“Device name and product code” on page 13](#).

The Fast Ethernet PSE ports allow you to connect network components as a PoE voltage sink according to the standard IEEE 802.3 10BASE-T/100BASE-TX and IEEE 802.3af/at.

With the presence of the PoE power supply, a separate power supply for the connected device is unnecessary.

The PoE power is supplied via the wire pairs transmitting the signal (phantom voltage).

The individual ports (joint PoE voltage) are not electrically insulated from each other.

Maximum power available to PoE end devices in total:

124 W

Maximum power available to a media module:

62 W

Note: Connect only PoE-supplier devices whose data connections are located in the interior of the building and are specified as SELV circuits.

The PoE support complies with the following technical standards:

| Technical standard | Description | |
|--------------------|-------------------|---|
| IEEE 802.3af | Brief description | PoE |
| | Classes | max. Powered Device (PD) class 0 (15,4 W) |
| IEEE 802.3at | Brief description | PoE+ |
| | Classes | max. Powered Device (PD) class 4 (30 W) |

Table 10: PoE support: technical standards

In accordance with IEEE 802.3af and IEEE 802.3at:

- Endpoint PSE
- Alternative A.

1.7 Display elements

After the working voltage is set up, the software starts and initializes itself. Afterwards, the device performs a self-test. During this process, various LEDs light up.

1.7.1 Device state

These LEDs provide information about conditions which affect the operation of the whole device.



| LED | Display | Color | Activity | Meaning |
|--------|--|--------|--------------------------|--|
| Power | Working voltage | — | None | Working voltage is too low |
| | | Yellow | Lights up | Device variants with redundant power supply: Working voltage 1 or 2 is on |
| | | | flashes 4 times a period | Software update is running. Maintain the power supply. |
| | | Green | Lights up | Device variants with redundant power supply: Working voltages 1 and 2 are on Device variants with single power supply: Operating voltage is on |
| ACA | Storage medium ACA21 / ACA22 ACA31 | — | None | ACA storage medium not connected |
| | | Green | Lights up | ACA storage medium connected |
| | | | Flashes 3 times a period | Device writes to/reads from the storage medium |
| | | Yellow | Lights up | ACA storage medium inoperative |
| RM | Ring Manager | — | None | No redundancy configured |
| | | Green | Lights up | Redundancy exists |
| | | | Flashes 1 time a period | Device is reporting an incorrect configuration of the RM function |
| | | Yellow | Lights up | No redundancy exists |
| Status | Device Status | — | None | Device is starting and/or is not ready for operation |
| | | Green | Lights up | Device is ready for operation. Characteristics can be configured |
| | | Red | Lights up | Device is ready for operation. Device has detected at least one error in the monitoring results |
| | | | Flashes 1 time a period | The boot parameters used when the device has been started differ from the boot parameters saved. Start the device again. |
| | | | flashes 4 times a period | Device has detected a multiple IP address |

1.7.2 Media module status

■ Device variants RSPE 30 and RSPE 35

1 LED is located on the upper part of the media module.

This LED provides information on the working voltage status of the media module.

■ Power

| LED | Display | Color | Activity | Meaning |
|-------|-----------------|-------|-----------|-----------------------------|
| Power | Working voltage | — | None | Media module is inoperative |
| | | Green | Lights up | Operating voltage is on |

■ Device variants RSPE 32 and RSPE 37

2 LEDs are located on the upper part of the media module.

These LEDs combined provide information on the working voltage status and the PoE status of the media module.

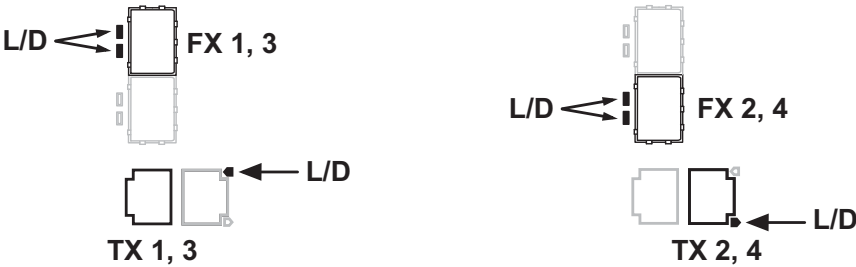
■ ■ Power

| LED | Display | Color | Activity | Meaning |
|-------|-----------------|--------|-----------|--|
| Power | Working voltage | — | None | Media module is inoperative |
| | | Green | Lights up | power supply to the media module is on power supply to the PoE port is on |
| | | Yellow | Lights up | PoE voltage is missing or is too low |

1.7.3 Port state

These LEDs provide port-related information.
The LEDs are directly located on the ports.

■ Gigabit combo port



| LED | Display | Color | Activity | Meaning |
|-----|-------------|--------|--------------------------|--|
| L/D | Link status | — | None | Device detects an invalid or missing link |
| | | | | Note: When an SFP transceiver is connected, the corresponding twisted pair interface is automatically inactive. |
| | | Green | Lights up | Device detects a valid link |
| | | | Flashes 1 time a period | Port is switched to stand-by |
| | | | Flashes 3 times a period | Port is switched off |
| | | Yellow | Lights up | Device detects a non -supported SFP transceiver or a non -supported data rate |
| | | | Flashing | Device is transmitting and/or receiving data |
| | | | Flashes 1 time a period | Device detects at least one unauthorized MAC address (Port Security Violation) |

■ Fast Ethernet port



| LED | Display | Color | Activity | Meaning |
|-----|-------------|--------|--------------------------|---|
| L/D | Link status | — | None | Device detects an invalid or missing link |
| | | Green | Lights up | Device detects a valid link |
| | | | Flashes 1 time a period | Port is switched to stand-by |
| | | | Flashes 3 times a period | Port is switched off |
| | | Yellow | Lights up | Device detects a non -supported SFP transceiver or a non -supported data rate |
| | | | Flashing | Device is transmitting and/or receiving data |
| | | | Flashes 1 time a period | Device detects at least one unauthorized MAC address (Port Security Violation) |
| PoE | PoE status | — | None | RSPE 30, RSPE 35: LED is without any function |
| | | | | RSPE 32, RSPE 37: No powered device connected |
| | | Green | Lights up | Power device is supplied with PoE voltage |
| | | Yellow | Flashes 1 time a period | Output budget has been exceeded Device has detected a connected powered device |
| | | | Flashes 3 times a period | PoE administrator status deactivated |

1.8 Management interfaces

1.8.1 V.24 interface (external management)

A serial interface is provided on the RJ11 socket (V.24 interface) for the local connection of an external management station (VT100 terminal or PC with corresponding terminal emulation). This enables a connection to the Command Line Interface (CLI) and the system monitor to be made.

| VT 100 terminal settings | |
|--------------------------|------------|
| Speed | 9,600 Baud |
| Data | 8 bit |
| Stopbit | 1 bit |
| Handshake | off |
| Parity | none |

The socket housing is electrically connected to the front panel of the device. The V.24 interface is electrically insulated from the working voltage.

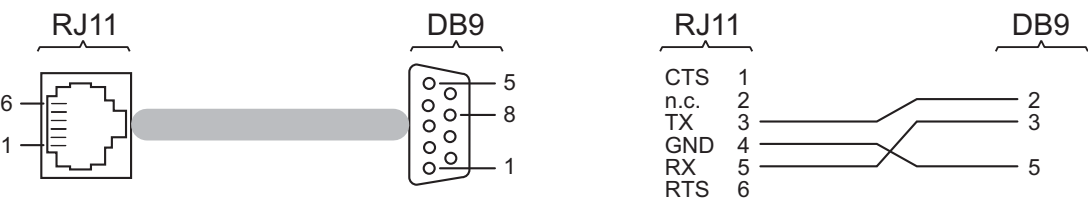


Figure 1: Pin assignment of the V.24 interface and the DB9 connector

Note: You find the order number for the terminal cable, which is available as accessory, under [“Accessories” on page 58](#).

1.8.2 SD card interface

The SD card interface allows you to connect the AutoConfiguration Adapter ACA31 storage medium. This is used for saving/loading the configuration data and diagnostic information, and for loading the software.

See [“Accessories” on page 58](#).

For information about the position on the device see [“Rear view” on page 19](#).

On the front of the device there is an LED display that informs you about the status of the interface.

Only use Hirschmann SD cards.

1.8.3 USB interface

The USB interface allows you to connect the AutoConfiguration Adapter ACA21 / ACA22 storage medium. This is used for saving/loading the configuration data and diagnostic information, and for loading the software. See [“Accessories” on page 58](#).

For information about the position on the device see [“Front view” on page 18](#).

On the front of the device there is an LED display that informs you about the status of the interface.

The USB interface has the following properties:

- ▶ Supplies current of max. 500 mA
- ▶ Voltage not potential-separated
- ▶ Connectors: type A
- ▶ Supports the USB master mode
- ▶ Supports USB 2.0

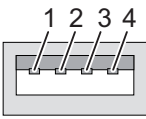
| Figure | Pin | Operation |
|--|-----|--------------|
|  | 1 | VCC (VBus) |
| | 2 | - Data |
| | 3 | + Data |
| | 4 | Ground (GND) |

Table 11: Pin assignment of the USB interface

1.9 Signal contact

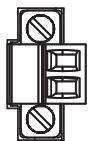


Figure 2: Signal contact: 2-pin terminal block with screw locking

The signal contact is a potential-free relay contact.

The device allows you to perform remote diagnosis via the signal contact. In the process, the device signals events such as a line interruption. When an event occurs, the device opens the relay contact and interrupts the closed circuit. The management setting specifies which events switch a contact. You can also use the management to switch the signal contact manually and thus control external devices.

2 Installation

The devices have been developed for practical application in a harsh industrial environment.

On delivery, the device is ready for operation.

The following steps should be performed to install and configure a device:

- ▶ [Unpacking and checking the content of the package](#)
- ▶ [Installing the SD card \(optional\)](#)
- ▶ [Mounting a dummy panel or a media module](#)
- ▶ [Installing and grounding the device](#)
- ▶ [Installing an SFP transceiver \(optional\)](#)
- ▶ [Connecting the terminal blocks](#)
- ▶ [Operating the device](#)
- ▶ [Connecting data cables](#)
- ▶ [Filling out the inscription label](#)

2.1 Unpacking and checking the content of the package

Proceed as follows:

- ☐ Check whether the package includes all items named in the section [“Scope of delivery” on page 58](#).
- ☐ Check the individual parts for transport damage.

2.2 Installing the SD card (optional)

Note: Only use the AutoConfiguration Adapter ACA31 storage medium.
[See “Accessories” on page 58](#).

Proceed as follows:

- ☐ Deactivate the write protection on the SD card by pushing the write-protect lock towards the middle of the card.
- ☐ Push the SD card into the slot with the beveled corner facing upwards.
- ☐ Tighten the thumb screw hand-tight to fix the SD card.

2.3 Mounting a dummy panel or a media module

Hirschmann supplies the RSPE 30/32/35/37 device with free, uncovered media module slots.

2.3.1 Mounting a dummy panel

If you do not use media modules, close the slots with dummy panels, that you obtain as an accessory, in order to keep the degree of protection.

[See “Accessories” on page 58.](#)

Proceed as follows:

- ☐ Place the dummy panel onto the media module slot of the device.
- ☐ Fasten the dummy panel to the device by tightening the 2 screws.

2.3.2 Mounting a media module

Hirschmann supplies the media modules ready for operation.

The media modules provide restricted hot-swap-capability. You have the option of mounting the media modules while the device is operating. To start the operation, it is necessary to restart the device.

Proceed as follows:

- ☐ Remove the dummy panel (if mounted) from the media module slot on the device.
- ☐ Insert the media module into the slot on the device.
- ☐ Fasten the media module to the device by tightening the 2 screws.
- ☐ Restart the device.

2.4 Installing and grounding the device



WARNING

FIRE HAZARD

Install the device in a fire protected enclosure according to EN 60950-1.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Only for device variants featuring working voltage with the characteristic value K9 or KK:



WARNING

ELECTRIC SHOCK

Install this device solely in a switch cabinet or in an operating site with restricted access, to which maintenance staff have exclusive access.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

2.4.1 Installing the device onto the DIN rail

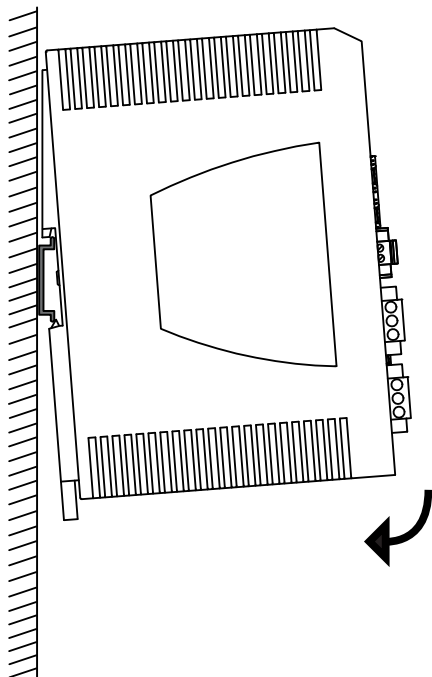
Verify that the device maintains the minimum clearing in order to meet the climatic conditions:

- ▶ Top and bottom side of the device: 10 cm
- ▶ Left and right side of the device: 2 cm

Undercutting the minimum clearing reduces the specified maximum operating temperature ([see on page 49 “General technical data”](#)).

To mount the device onto a horizontally mounted 35 mm DIN rail according to DIN EN 60715, proceed as follows:

- ☐ Slide the upper snap-in guide of the device into the DIN rail.
- ☐ Press the media module downwards onto the clip-in bar.
- ☐ Snap in the device.



Note: The overall shield of a connected shielded twisted pair cable is connected to the ground connector on the front panel as a conductor.

2.4.2 Grounding the device

The housing is grounded via the separate ground screw on the bottom left of the front panel.

The device variants featuring working voltage with the characteristic value K9 and KK have 1 connection for protective grounding.

The device variants featuring working voltage with the characteristic value CC and PP have 1 connection for functional grounding.

You will find information on the characteristic values here:

[“Device name and product code” on page 13](#)

☐ Ground the device via the ground screw.

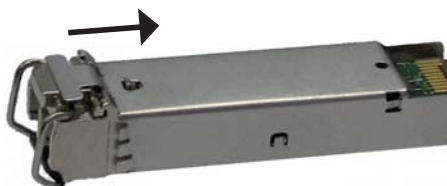
2.5 Installing an SFP transceiver (optional)

For this device, only use suitable SFP modules from Hirschmann.

See [“Accessories” on page 58](#).

Proceed as follows:

- ☐ Remove the protective cap from the SFP transceiver.
- ☐ Push the SFP transceiver with the lock closed into the socket until you hear it latch in.



2.6 Connecting the terminal blocks



WARNING

ELECTRIC SHOCK

Connect only a working voltage that corresponds to the type plate of your device.

Never insert sharp objects (small screwdrivers, wires, etc.) into the connection terminals for electric conductors, and do not touch the terminals.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Note: The working voltage is connected to the chassis through protective elements exclusively.

2.6.1 Working voltage characteristic value K9

You will find information on the characteristic values here:

[“Device name and product code” on page 13](#)

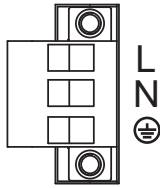


Figure 3: Working voltage characteristic value K9: 3-pin terminal block with screw locking




| Type of the voltages that can be connected | Specification of the working voltage | Connections |
|--|---|--|
| DC voltage | Rated voltage range DC 60 V ... 250 V Voltage range DC incl. maximum tolerances 48 V ... 320 V | +/L Plus terminal of the working voltage |
| | | -/N Minus terminal of the working voltage |
| | |  Protective conductor |
| AC voltage | Rated voltage range AC 110 V ... 230 V, 50 Hz ... 60 Hz Voltage range AC incl. maximum tolerances 88 V ... 265 V, 47 Hz ... 63 Hz | +/L Outer conductor |
| | | -/N Neutral conductor |
| | |  Protective conductor |

Table 12: Working voltage characteristic value K9: type and specification of the working voltage, connections

| |
|--|
| <div>WARNING</div> |
| ELECTRIC SHOCK Install this device solely in a switch cabinet or in an operating site with restricted access, to which maintenance staff have exclusive access. Failure to follow these instructions can result in death, serious injury, or equipment damage. |

For the operating voltage to be connected, perform the following steps:

- ☐ Remove the power connector from the device.
- ☐ Connect the protective conductor according to the pin assignment on the device with the clamp.
- ☐ Connect the wires according to the pin assignment on the device with the clamps.
- ☐ Fasten the wires connected by tightening the terminal screws.

2.6.2 Working voltage with the characteristic value KK

You will find information on the characteristic values here:
“Device name and product code” on page 13

You have the option of supplying the working voltage redundantly, without load distribution.
Both working voltage inputs are uncoupled.
With a redundant supply, the working voltage 1 (upper voltage input on the device) has priority.

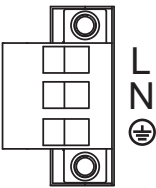


Figure 4: Working voltage with the characteristic value KK: 3-pin terminal block with screw locking




| Type of the voltages that can be connected | Specification of the working voltage | Connections |
|--|---|--|
| DC voltage | Rated voltage range DC 60 V ... 250 V Voltage range DC incl. maximum tolerances 48 V ... 320 V | +/L Plus terminal of the working voltage |
| | | -/N Minus terminal of the working voltage |
| | |  Protective conductor |
| AC voltage | Rated voltage range AC 110 V ... 230 V, 50 Hz ... 60 Hz Voltage range AC incl. maximum tolerances 88 V ... 265 V, 47 Hz ... 63 Hz | +/L Outer conductor |
| | | -/N Neutral conductor |
| | |  Protective conductor |

Table 13: Working voltage with the characteristic value KK: type and specification of the working voltage, connections

**WARNING**

ELECTRIC SHOCK

Install this device solely in a switch cabinet or in an operating site with restricted access, to which maintenance staff have exclusive access.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

For **every** working voltage to be connected, perform the following steps:

- ☐ Remove the power connector from the device.
- ☐ Connect the protective conductor according to the pin assignment on the device with the clamp.
- ☐ Connect the wires according to the pin assignment on the device with the clamps.
- ☐ Fasten the wires connected by tightening the terminal screws.

With a non-redundant supply of the working voltage, the device reports the loss of a working voltage. You can prevent this message by changing the configuration in the Management.

2.6.3 Working voltage characteristic value CC

You will find information on the characteristic values here:

[“Device name and product code” on page 13](#)

You have the option of supplying the working voltage redundantly, without load distribution.

Both working voltage inputs are uncoupled.

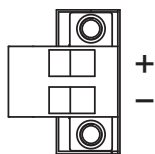


Figure 5: Working voltage characteristic value CC: 2-pin terminal block with screw locking

| Type of the voltages that can be connected | Specification of the working voltage | Connections |
|--|---|---|
| DC voltage | Rated voltage range DC 24 V ... 48 V | + Plus terminal of the working voltage |
| | Voltage range DC incl. maximum tolerances 18 V ... 60 V | - Minus terminal of the working voltage |

Table 14: Working voltage characteristic value CC: type and specification of the working voltage, connections

For **every** working voltage to be connected, perform the following steps:

- ☐ Remove the power connector from the device.
- ☐ Connect the wires according to the pin assignment on the device with the clamps.
- ☐ Fasten the wires connected by tightening the terminal screws.

With non-redundant supply of the operating voltage, the device reports the loss of an operating voltage. You can prevent this message by applying the operating voltage via both inputs, or by changing the configuration in the Management.

2.6.4 Working voltage with the characteristic value PP

You will find information on the characteristic values here:

[“Device name and product code” on page 13](#)

You have the option of supplying the working voltage redundantly, without load distribution.

Both working voltage inputs are uncoupled.

Ensure that the external power supply unit you use to provide the PoE voltage fulfills the insulation requirements according to IEEE 802.3 (insulation resistance 48 V, output to the “rest of the world” 750 V DC for 60 seconds).

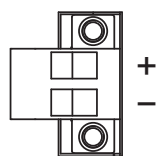


Figure 6: Working voltage with the characteristic value PP: 2-pin terminal block with screw locking

| Type of the voltages that can be connected | Specification of the working voltage | Connections |
|--|---|---|
| When using PoE: DC voltage | Nominal voltage DC: 48 V | + Plus terminal of the working voltage |
| | Voltage range DC incl. maximum tolerances: 47 V... 57 V | - Minus terminal of the working voltage |
| When using PoE+: DC voltage | Nominal voltage DC: 54 V | + Plus terminal of the working voltage |
| | Voltage range DC incl. maximum tolerances: 53 V... 57 V | - Minus terminal of the working voltage |
| Without using PoE or PoE+: DC voltage | Nominal voltage range DC: 24 V ... 48 V | + Plus terminal of the working voltage |
| | Voltage range DC incl. maximum tolerances: 19 V ... 60 V | - Minus terminal of the working voltage |

Table 15: Working voltage with the characteristic value PP: type and specification of the supply voltage, connections

For **every** working voltage to be connected, perform the following steps:

- ☐ Remove the power connector from the device.
- ☐ Connect the wires according to the pin assignment on the device with the clamps.
- ☐ Fasten the wires connected by tightening the terminal screws.

With non-redundant supply of the operating voltage, the device reports the loss of an operating voltage. You can prevent this message by applying the operating voltage via both inputs, or by changing the configuration in the Management.

2.6.5 Signal contact

- ☐ Connect the signal contact wires with the connectors of the terminal block.
- ☐ Fasten the wires connected by tightening the terminal screws.

2.7 Operating the device

Relevant for North America:

The torque for tightening the working voltage terminal block on the device is 4.5 lb-in (0.51 Nm).

The torque for tightening the terminal block for the signal contact on the device is 3 lb-in (0.34 Nm).

Proceed as follows:

- ☐ Use screws to secure the connectors to the device.
- ☐ Enable the working voltage.

2.8 Connecting data cables

In general, adhere to the following recommendations for data cable connections in environments with high electrical interference levels:

- ▶ Keep the length of the data cables as short as possible.
 - ▶ Use optical data cables for the data transmission between the buildings.
 - ▶ When using copper cables, provide a sufficient gap between the power supply cables and the data cables. Ideally, install the cables in separate cable channels.
 - ▶ Use shielded cables.
- ☐ Connect the data cable according to your requirements.

For further information see [“Device name and product code” on page 13](#).

2.9 Filling out the inscription label

The inscription label for the IP address on the front of the device helps you identify your device.

3 Making basic settings

The IP parameters must be entered when the device is installed for the first time. The device provides the following options for configuring IP addresses:

- ▶ Entry via V.24 connection
- ▶ Entry with the aid of the HiDiscovery logs on the applications HiDiscovery or Industrial HiVision
- ▶ Configuration via BOOTP
- ▶ Configuration via DHCP (Option 82)
- ▶ AutoConfiguration Adapter

Further information on the basic settings of the device can be found in the user manual on the CD/DVD.

■ **Default settings**

- ▶ IP address: The device looks for the IP address using DHCP
- ▶ Management password:
 - user, password: public (read only)
 - admin, password: private (read/write)
- ▶ V.24 data rate: 9,600 Baud
- ▶ Ethernet ports: link status is not evaluated (signal contact)
- ▶ Optical ports: Full duplex
- ▶ TP ports: Autonegotiation
- ▶ RSTP (Rapid Spanning Tree) activated

4 Upgrading Software

The upgrade options for your RSPE 30/32/35/37 device depend on the software level of the device.

See [“Device name and product code” on page 13](#).

Note: For software version 04.0 or higher, “HiOS” is available as a common software image for all software levels.

You select only the desired redundancy function during the installation of the image. After finishing the installation and manually restarting the device, the device automatically activates the functions of the software level saved in the product code.

| Software version | | Software level according to the product code | | |
|-----------------------|-----------------------------------|--|---------|------|
| | | 2S | 2A | 3S |
| HiOS 03.1 | Name of the software image | – | HiOS-2A | – |
| | Range of functions corresponds to | – | 2A | – |
| From HiOS 04.0 onward | Name of the software image | HiOS | HiOS | HiOS |
| | Range of functions corresponds to | 2S | 2A | 3S |

Table 16: Upgrade options

5 Monitoring the ambient air temperature

Operate the device below the specified maximum ambient air temperature exclusively.

See [“General technical data” on page 49](#).

The ambient air temperature is the temperature of the air at a distance of 2 in (5 cm) from the device. It depends on the installation conditions of the device, e.g. the distance from other devices or other objects, and the output of neighboring devices.

The temperature displayed in the CLI and the GUI is the internal temperature of the device. It is higher than the ambient air temperature. The maximum internal temperature of the device named in the technical data is a guideline that indicates to you that the maximum ambient air temperature has possibly been exceeded.

6 Maintenance and service

- ▶ When designing this device, Hirschmann largely avoided using high-wear parts. The parts subject to wear and tear are dimensioned to last longer than the lifetime of the product when it is operated normally. Operate this device according to the specifications.
- ▶ Relays are subject to natural wear. This wear depends on the frequency of the switching operations. Check the resistance of the closed relay contacts and the switching function depending on the frequency of the switching operations.
- ▶ Hirschmann are continually working on improving and developing their software. Check regularly whether there is an updated version of the software that provides you with additional benefits. You find information and software downloads on the Hirschmann product pages on the Internet (www.hirschmann.com).
- ▶ Depending on the degree of pollution in the operating environment, check at regular intervals that the ventilation slots in the device are not obstructed.

Note: You will find information about the complaints and returns procedures on the Internet under

<http://www.beldensolutions.com/en/Service/Repairs/index.phtml> .

7 Disassembly

7.1 Removing the device



WARNING

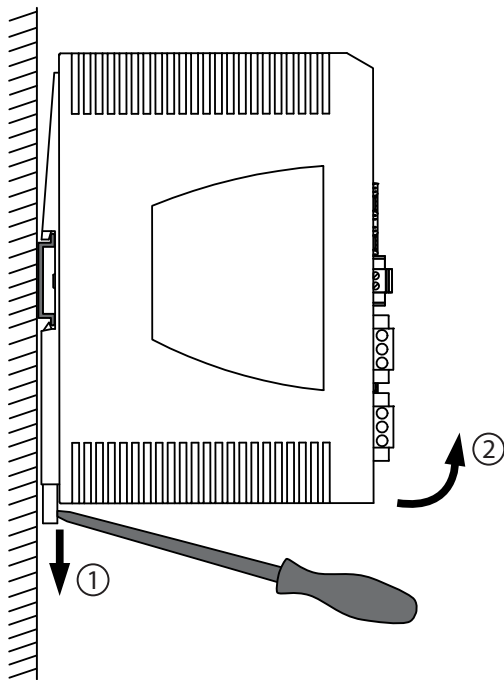
ELECTRIC SHOCK

Disconnect the grounding only after disconnecting all other cables.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Proceed as follows:

- ☐ Disconnect the data cables.
- ☐ Disable the working voltage.
- ☐ Disconnect the terminal blocks.
- ☐ Disconnect the grounding.
- ☐ Insert a screwdriver horizontally below the housing into the locking gate.
- ☐ Without tilting the screwdriver, pull the locking gate down and tilt the device upwards.



7.2 Removing an SFP transceiver (optional)

Proceed as follows:

- ☐ Pull the SFP transceiver out of the socket by means of the opened lock.



- ☐ Close the SFP transceiver with the protective cap.

7.3 Removing a media module (optional)

You have the option to remove the media modules while the device is operating.

Proceed as follows:

- ☐ Loosen the 2 screws on the media module.
- ☐ Pull the media module to the front out of the slot.
- ☐ Close the media module slot on the device with a dummy panel.

[See “Accessories” on page 58.](#)

8 Technical data

■ General technical data

| | | | |
|--|---|--------------------------------------|---------------|
| Dimensions | RSPE 30/32/35/37 | See "Dimension drawings" on page 51. | |
| Weight | Devices with operating temperature characteristic value S (standard): | 4.6 lb (2.2 kg) | |
| | Devices with operating temperature characteristic value E and T (extended): | 5.5 lb (2.5 kg) | |
| Power supply Working voltage with the characteristic value CC | Nominal voltage DC | 24 V ... 48 V Class 2 | |
| | Voltage range DC incl. maximum tolerances | 18 V ... 60 V Class 2 | |
| | Connection type | 2-pin terminal block | |
| | Power failure bypass | > 10 ms at 20.4 V DC | |
| | Overload current protection at input | Non-replaceable fuse | |
| | Back-up fuse for each voltage input | Nominal rating: | 1 A |
| | | Characteristic: | slow blow |
| | Peak inrush current | < 4 A | |
| Power supply Working voltage with the characteristic value K9 and KK | Nominal voltage AC | 110 V ... 230 V, 50 Hz ... 60 Hz | |
| | Voltage range AC incl. maximum tolerances | 88 V ... 265 V, 47 Hz ... 63 Hz | |
| | Nominal voltage DC | 60 V ... 250 V | |
| | Voltage range DC incl. maximum tolerances | 48 V ... 320 V | |
| | Connection type | 3-pin terminal block | |
| | Power failure bypass | > 10 ms at 98 V AC | |
| | Overload current protection at input | Non-replaceable fuse | |
| | Back-up fuse | Nominal rating: | 1 A ... 20 A |
| | | Characteristic: | slow blow |
| | Peak inrush current | < 3.5 A | |
| Power supply Working voltage with the characteristic value PP | Nominal voltage DC | When using PoE: | 48 V |
| | | When using PoE+: | 54 V |
| | | Without using PoE or PoE+: | 24 V ... 48 V |
| | Voltage range DC incl. maximum tolerances | When using PoE: | 47 V... 57 V |
| | | When using PoE+: | 53 V... 57 V |
| | | Without using PoE or PoE+: | 19 V ... 60 V |
| | Max. PoE power | In total: | 124 W |
| | | Per media module: | 62 W |
| | Connection type | 2-pin terminal block | |
| | Power failure bypass | > 10 ms at 20.4 V DC | |
| | Overload current protection at input | Non-replaceable fuse | |
| | Back-up fuse | Nominal rating: | 6.3 A |
| | | Characteristic: | slow blow |
| | Peak inrush current | < 5 A | |

| | | |
|--------------------------------------|---|---|
| Climatic conditions during operation | Minimum clearance around the device | Top and bottom device side: 3.94 in (10 cm) Left and right device side: 0.79 in (2 cm) Derating ^a : 3 K at the following clearance: Top and bottom device side: 0.79 in (2 cm) Left and right device side: 0 in |
| | Ambient air temperature ^b | Devices with operating temperature characteristic value S (standard): +32 °F ... +140 °F (0 °C ... +60 °C) ^c Devices with operating temperature characteristic value E and T (extended): ► RSPE 32, RSPE 37: -40 °F ... +158 °F (-40 °C ... +70 °C) ^{d,e} -40 °F ... +185 °F (-40 °C ... +85 °C) for 16 hours (tested in accordance with IEC 60068-2-2) ^{d,f} ► RSPE 30, RSPE 35: -40 °F ... +158 °F (-40 °C ... +70 °C) ^d -40 °F ... +185 °F (-40 °C ... +85 °C) for 16 hours (tested in accordance with IEC 60068-2-2) ^d |
| | Maximum inner temperature of device (guideline) | Devices with operating temperature characteristic value S (standard): 190 °F (88 °C) Devices with operating temperature characteristic value E and T (extended): 208 °F (98 °C) |
| | Humidity | 5 % ... 95 % (non-condensing) |
| | Air pressure | minimum 700 hPa (+9842 ft; +3000 m) maximum 1060 hPa (-1312 ft; -400 m) |
| Climatic conditions during storage | Ambient air temperature ^a | -40 °F ... +185 °F (-40 °C ... +85 °C) |
| | Humidity | 5 % ... 95 % (non-condensing) |
| | Air pressure | minimum 700 hPa (+9842 ft; +3000 m) maximum 1060 hPa (-1312 ft; -400 m) |
| Signal contact | Switching current | max. 1 A, SELV |
| | Switching voltage | max. 60 V DC or max. 30 V AC, SELV under UL conditions: max. 30 V DC, resistive load |
| Pollution degree | | 2 |
| Protection classes | Laser protection | Class 1 in compliance with IEC 60825-1 |
| | Degree of protection | IP20 |

- a. Reduction of the maximum permitted ambient air temperature when undercutting the minimum clearance
- b. Temperature of the ambient air at a distance of 2 inches (5 cm) from the device
- c. Hirschmann recommends to use SFP transceivers with the "EEC" extension.
- d. Use only SFP transceivers with the "EEC" extension, otherwise the standard temperature range applies.
- e. when equipped with max. 8 SFP transceivers; if a higher number is connected, the following maximum values apply for the ambient air temperature:
9 to 12 transceivers: +149 °F (+65 °C); more than 12 transceivers: +140 °F (+60 °C)
- f. when equipped with max. 8 SFP transceivers; if a higher number is connected, the following maximum values apply for the ambient air temperature:
9 to 12 transceivers: +176 °F (+80 °C); more than 12 transceivers: +167 F (+75 °C)

■ Dimension drawings

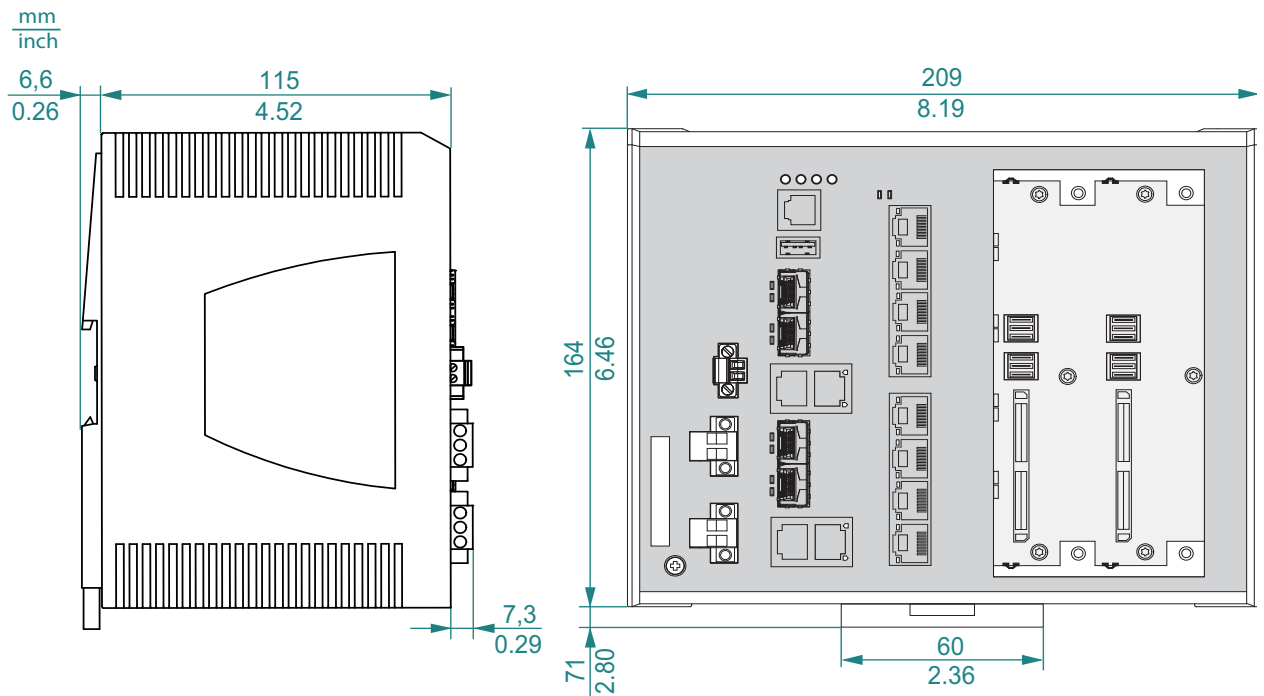


Figure 7: Dimensions of the device variants with operating temperature characteristic value S. For the characteristic value, cf. “Device name and product code” on page 13.

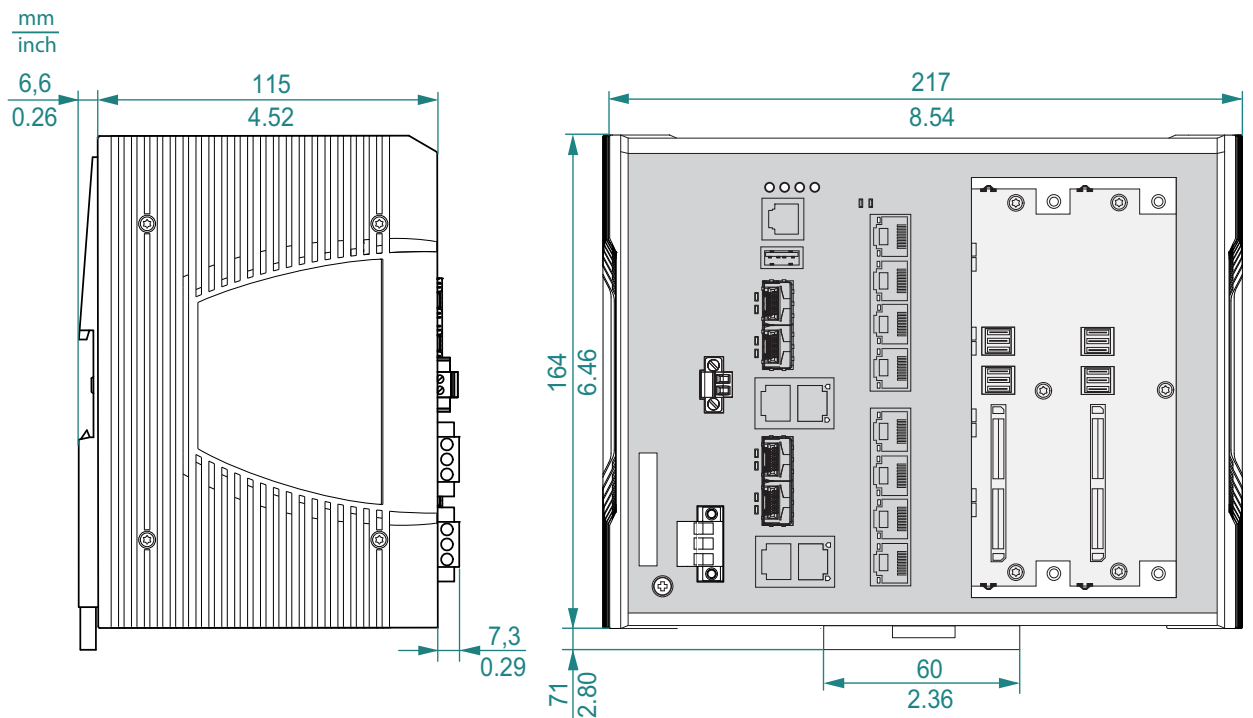


Figure 8: Dimensions of device variants with operating temperature characteristic value E and T. For the characteristic value, cf. “Device name and product code” on page 13.

■ EMC and immunity

| EMC interference emission | | Standard applications ^a | Merchant Navy ^b | Railway applications (trackside) ^c | Substation applications ^d |
|---------------------------|-------------------------------|------------------------------------|----------------------------|---|--------------------------------------|
| Radiated emission | | | | | |
| EN 55022 | | Class A | Class A | Class A | Class A |
| GL Guidelines | | — | EMC 1 | — | — |
| FCC 47 CFR Part 15 | | Class A | Class A | Class A | Class A |
| EN 61000-6-4 | | Fulfilled | Fulfilled | Fulfilled | Fulfilled |
| Conducted emission | | | | | |
| EN 55022 | DC supply connection | Class A | Class A | Class A | Class A |
| GL Guidelines | DC supply connection | — | EMC 1 | — | — |
| FCC 47 CFR Part 15 | DC supply connection | Class A | Class A | Class A | Class A |
| EN 61000-6-4 | DC supply connection | Fulfilled | Fulfilled | Fulfilled | Fulfilled |
| EN 55022 | Telecommunication connections | Class A | Class A | Class A | Class A |
| EN 61000-6-4 | Telecommunication connections | Fulfilled | Fulfilled | Fulfilled | Fulfilled |

a. EN 61131-2, CE, FCC – applies to all devices

b. Merchant Navy – applies to devices with the certification codes VU, U9, UY, UW, UX

c. EN 50121-4 – applies to devices with the certification codes VT, T9, TY

d. EN 61850-3, IEEE 1613 – applies to devices with the certification codes V9, VY, VU, VT

| EMC interference immunity | | Standard applications ^a | Merchant Navy ^b | Railway applications (trackside) ^c | Substation applications ^d |
|--|----------------------|------------------------------------|----------------------------|---|--------------------------------------|
| Electrostatic discharge | | | | | |
| EN 61000-4-2 IEEE C37.90.3 | Contact discharge | ± 4 kV | ± 6 kV | ± 6 kV | ± 8 kV |
| EN 61000-4-2 IEEE C37.90.3 | Air discharge | ± 8 kV | ± 8 kV | ± 8 kV | ± 15 kV |
| Electromagnetic field | | | | | |
| EN 61000-4-3 | 80 MHz ... 3000 MHz | 10 V/m | 10 V/m | 20 V/m | 10 V/m |
| IEEE 1613 | 80 MHz ... 1000 MHz | — | — | — | 35 V/m |
| Fast transients (burst) | | | | | |
| EN 61000-4-4 IEEE C37.90.1 | DC supply connection | ± 2 kV | ± 2 kV | ± 2 kV | ± 4 kV |
| EN 61000-4-4 IEEE C37.90.1 | Data line | ± 4 kV | ± 4 kV | ± 2 kV | ± 4 kV |
| Voltage surges - DC supply connection | | | | | |
| EN 61000-4-5 | line/ground | ± 2 kV | ± 2 kV | ± 2 kV | ± 2 kV |
| IEEE 1613 | line/ground | — | — | — | ± 5 kV |
| EN 61000-4-5 | line/line | ± 1 kV | ± 1 kV | ± 1 kV | ± 1 kV |
| Voltage surges - data line | | | | | |
| EN 61000-4-5 | line/ground | ± 1 kV | ± 1 kV | ± 2 kV | ± 2 kV |
| Conducted disturbances | | | | | |
| EN 61000-4-6 | 150 kHz ... 80 MHz | 10 V | 10 V | 10 V | 10 V |

| EMC interference immunity | | Standard applications ^a | Merchant Navy ^b | Railway applications (trackside) ^c | Substation applications ^d |
|--|-------------|------------------------------------|----------------------------|---|--------------------------------------|
| Damped vibration – DC supply connection | | | | | |
| EN 61000-4-12 | line/ground | — | — | — | 2.5 kV |
| IEEE C37.90.1 | | | | | |
| EN 61000-4-12 | line/line | — | — | — | 1 kV |
| IEEE C37.90.1 | | | | | |
| Damped oscillation - data line | | | | | |
| EN 61000-4-12 | line/ground | — | — | — | 2.5 kV |
| IEEE C37.90.1 | | | | | |
| EN 61000-4-12 | line/line | — | — | — | ± 1 kV |
| Pulse magnetic fields | | | | | |
| EN 61000-4-9 | | — | — | 300 A/m | — |

a. EN 61131-2, CE, FCC – applies to all devices

b. Merchant Navy – applies to devices with the certification codes VU, U9, UY, UW, UX

c. EN 50121-4 – applies to devices with the certification codes VT, T9, TY

d. EN 61850-3, IEEE 1613 – applies to devices with the certification codes V9, VY, VU, VT

| Stability | | Standard applications ^a | Merchant Navy ^b | Railway applications (trackside) ^c | Substation applications ^d |
|-------------------------|-----------|--|---|---|--|
| IEC 60068-2-6, test Fc | Vibration | 5 Hz ... 8.4 Hz with 0.14 in. (3.5 mm) amplitude | 2 Hz ... 13.2 Hz with 0.04 in. (1 mm) amplitude | — | 2 Hz ... 9 Hz with 0.12 in. (3 mm) amplitude |
| | | 8.4 Hz ... 150 Hz with 0.04 oz (1 g) | 13.2 Hz ... 200 Hz with 0.025 oz (0.7 g) | — | 9 Hz ... 200 Hz with 0.04 oz (1 g) |
| | | — | — | — | 200 Hz ... 500 Hz with 0.05 oz (1.5 g) |
| IEC 60068-2-27, test Ea | Shock | 0.53 oz (15 g) at 11 ms | — | — | 0.35 oz (10 g) at 11 ms |

a. EN 61131-2, CE, FCC – applies to all devices

b. Merchant Navy – applies to devices with the certification codes VU, U9, UY, UW, UX

c. EN 50121-4 – applies to devices with the certification codes VT, T9, TY

d. EN 61850-3, IEEE 1613 – applies to devices with the certification codes V9, VY, VU, VT

■ Network range

Note: The line lengths specified for the transceivers apply for the respective fiber data (fiber attenuation and BLP/dispersion).

| Product code M-SFP-... | Wave length | Fiber | System attenuation | Example for F/O line length ^a | Fiber attenuation | BLP ^b /dispersion |
|---------------------------|-------------------------|-------------|--------------------|--|---------------------------|------------------------------|
| -SX/LC... | MM 850 nm | 50/125 µm | 0-7.5 dB | 0-550 m | 3.0 dB/km | 400 MHz×km |
| -SX/LC... | MM 850 nm | 62.5/125 µm | 0-7.5 dB | 0-275 m | 3.2 dB/km | 200 MHz×km |
| -MX/LC EEC | MM 1310 nm | 50/125 µm | 0-12 dB | 0-1.5 km | 1.0 dB/km | 800 MHz×km |
| -MX/LC EEC | MM 1310 nm | 62.5/125 µm | 0-12 dB | 0-500 m | 1.0 dB/km | 500 MHz×km |
| -LX/LC... | MM 1310 nm ^c | 50/125 µm | 0-10.5 dB | 0-550 m | 1.0 dB/km | 800 MHz×km |
| -LX/LC... | MM 1310 nm ^c | 62.5/125 µm | 0-10.5 dB | 0-550 m | 1.0 dB/km | 500 MHz×km |
| -LX/LC... | SM 1310 nm | 9/125 µm | 0-10.5 dB | 0-20 km ^d | 0.4 dB/km | 3.5 ps/(nm×km) |
| -LX+/LC... | SM 1310 nm | 9/125 µm | 5-20 dB | 14-42 km | 0.4 dB/km | 3.5 ps/(nm×km) |
| -LH/LC... | LH 1550 nm | 9/125 µm | 5-22 dB | 23-80 km | 0.25 dB/km | 19 ps/(nm×km) |
| -LH+/LC | LH 1550 nm | 9/125 µm | 15-30 dB | 71-108 km | 0.25 dB/km | 19 ps/(nm×km) |
| -LH+/LC | LH 1550 nm | 9/125 µm | 15-30 dB | 71-128 km | 0.21 dB/km (typically) | 19 ps/(nm×km) |

Table 17: Fiber port 1000BASE-FX (SFP fiber optic Gigabit Ethernet Transceiver)

- a. including 3 dB system reserve when compliance with the fiber data is observed
- b. Using the bandwidth length product is inappropriate for expansion calculations.
- c. With F/O adapter compliant with IEEE 802.3-2002 clause 38 (single-mode fiber offset-launch mode conditioning patch cord)
- d. including 2.5 dB system reserve when compliance with the fiber data is observed

| Product code M-SFP-BIDI... | Wave length TX | Wave length RX | Fiber | System attenuation | Example for F/O line length ^a | Fiber attenuation | Dispersion |
|-------------------------------|-------------------|-------------------|----------|--------------------|--|-------------------|----------------|
| Type A LX/LC EEC | SM 1310 nm | 1550 nm | 9/125 µm | 0-11 dB | 0-20 km | 0.4 dB/km | 3.5 ps/(nm×km) |
| Type B LX/LC EEC | SM 1550 nm | 1310 nm | 9/125 µm | 0-11 dB | 0-20 km | 0.25 dB/km | 19 ps/(nm×km) |
| Type A LH/LC EEC | LH 1490 nm | 1590 nm | 9/125 µm | 5-24 dB | 23-80 km | 0.25 dB/km | 19 ps/(nm×km) |
| Type B LH/LC EEC | LH 1590 nm | 1490 nm | 9/125 µm | 5-24 dB | 23-80 km | 0.25 dB/km | 19 ps/(nm×km) |

Table 18: F/O port (bidirectional Gigabit Ethernet SFP Transceiver)

- a. including 3 dB system reserve when compliance with the fiber data is observed

| Product code M-FAST-SFP-... | Wave length | Fiber | System attenuation | Example for F/O line length ^a | Fiber attenuation | BLP/dispersion |
|--------------------------------|-------------|---------|--------------------|--|-------------------|---------------------------------------|
| -MM/LC... | MM | 1310 nm | 50/125 μm | 0-8 dB | 0-5 km | 1.0 dB/km 800 MHz×km |
| -MM/LC... | MM | 1310 nm | 62.5/125 μm | 0-11 dB | 0-4 km | 1.0 dB/km 500 MHz×km |
| -SM/LC... | SM | 1310 nm | 9/125 μm | 0-13 dB | 0-25 km | 0.4 dB/km 3.5 ps/(nm×km) |
| -SM+/LC... | SM | 1310 nm | 9/125 μm | 10-29 dB | 25-65 km | 0.4 dB/km 3.5 ps/(nm×km) |
| -LH/LC... | SM | 1550 nm | 9/125 μm | 10-29 dB | 47-104 km | 0.25 dB/km 19 ps/(nm×km) |
| -LH/LC... | SM | 1550 nm | 9/125 μm | 10-29 dB | 55-140 km | 0.18 dB/km ^b 18 ps/(nm×km) |

Table 19: Fiber port 100BASE-FX (SFP fiber optic Fast Ethernet Transceiver)

- a. including 3 dB system reserve when compliance with the fiber data is observed
b. with ultra-low-loss optical fiber

MM = Multimode, SM = Singlemode, LH = Singlemode Longhaul

| 10/100/1000 Mbit/s twisted pair port | |
|--------------------------------------|------------------------------|
| Length of a twisted pair segment | max. 100 m (for cat5e cable) |

■ Power consumption/power output, order numbers

The order numbers correspond to the product codes of the devices.
See “Device name and product code” on page 13.

| Device name | Maximum power consumption ^a | Power output |
|---|--|---------------|
| RSPE 30 | 16 W | 55 BTU (IT)/h |
| RSPE 32 including 124 W PoE output power | 151 W | 92 BTU (IT)/h |
| RSPE 35 | 18 W | 61 BTU (IT)/h |
| RSPE 37 including 124 W PoE output power | 153 W | 98 BTU (IT)/h |
| RSPM20-4Z64Z6... | 9 W | 31 BTU (IT)/h |
| RSPM20-4T14T1... | 2 W | 7 BTU (IT)/h |
| RSPM20-4T14Z6... | 5 W | 17 BTU (IT)/h |
| RSPM22-4T14T1... including PoE output power | 2 W | 7 BTU (IT)/h |
| RSPM22-4T14Z6... including PoE output power | 5 W | 17 BTU (IT)/h |

a. The total power consumption is made up of the power to the basic module and the power to the media modules used.

■ Scope of delivery

| Number | Article |
|--------|---|
| 1 × | Device |
| 1 × | 2-pin terminal block for signal contact |
| 1 × | 3-pin terminal block for the working voltage (solely for device variants with the characteristic value K9 for the working voltage) |
| 2 × | 3-pin terminal block for the working voltage (only for device variants featuring working voltage with the characteristic value KK) |
| 2 × | 2-pin terminal block for the working voltage (only for device variants featuring working voltage with the characteristic value CC or PP) |
| 1 × | Installation user manual |
| 1 × | CD/DVD with manual |

■ Accessories

Note: Please note that products recommended as accessories may have characteristics that do not fully correspond to those of the device. This may limit their possible usage in the overall system.

| Name | Order number |
|---|--------------|
| Terminal cable | 943 301-001 |
| Network management software Industrial HiVision | 943 156-xxx |
| For device variants with the characteristic value K9 or KK for the working voltage: 3-pin terminal block (50 pieces) for working voltage | 943 845-008 |

| Name | Order number |
|---|--------------|
| For device variants with the characteristic value CC or PP for the working voltage: | 943 845-009 |
| 2-pin terminal block (50 pieces) for working voltage | |
| 2-pin terminal block (50 pieces) for signal contact | 943 845-010 |
| Power Cord | 942 000-001 |
| Dust protection cap (50 pieces) for RJ 45 sockets | 943 936-001 |
| Dust protection cap (25 pieces) for RJ 45 slot | 943 942-001 |
| Dummy panel for unused module slot | 942-131-001 |
| AutoConfiguration Adapter ACA 31 | 942 074-001 |
| AutoConfiguration Adapter ACA 21-USB (EEC) | 943 271-003 |
| AutoConfiguration Adapter ACA 22-USB (EEC) | 942 124-001 |

| Gigabit Ethernet SFP transceiver | Order number |
|----------------------------------|--------------|
| M-SFP-SX/LC | 943 014-001 |
| M-SFP-SX/LC EEC | 943 896-001 |
| M-SFP-MX/LC EEC | 942 108-001 |
| M-SFP-LX/LC | 943 015-001 |
| M-SFP-LX/LC EEC | 943 897-001 |
| M-SFP-LX+/LC | 942 023-001 |
| M-SFP-LX+/ LC EEC | 942 024-001 |
| M-SFP-LH/LC | 943 042-001 |
| M-SFP-LH/LC EEC | 943 898-001 |
| M-SFP-LH+/LC | 943 049-001 |

| Bidirectional Gigabit Ethernet SFP transceiver | Order number |
|--|--------------|
| M-SFP-BIDI Type A LX/LC EEC | 943 974-001 |
| M-SFP-BIDI Type B LX/LC EEC | 943 974-002 |
| M-SFP-BIDI Type A LH/LC EEC | 943 975-001 |
| M-SFP-BIDI Type B LH/LC EEC | 943 975-002 |
| M-SFP-BIDI Bundle LX/LC EEC (type A + B) | 943 974-101 |
| M-SFP-BIDI Bundle LH/LC EEC (type A + B) | 943 975-101 |

| Fast Ethernet SFP transceiver | Order number |
|-------------------------------|--------------|
| M-FAST SFP-TX/RJ45 | 942 098-001 |
| M-FAST SFP-TX/RJ45 EEC | 942 098-002 |

Note the following for the M-FAST SFP-TX... transceivers:

- ▶ Twisted pair ports realized through these transceivers have longer link failure detection times when compared to twisted pair ports provided by the device.
- ▶ When using these SFP transceivers, assume a higher failover time for RSTP.
- ▶ Not applicable for combo ports.

| | |
|-----------------------|-------------|
| M-FAST SFP-MM/LC | 943 865-001 |
| M-FAST SFP-MM/LC EEC | 943 945-001 |
| M-FAST SFP-SM/LC | 943 866-001 |
| M-FAST SFP-SM/LC EEC | 943 946-001 |
| M-FAST SFP-SM+/LC | 943 867-001 |
| M-FAST SFP-SM+/LC EEC | 943 947-001 |
| M-FAST SFP-LH/LC | 943 868-001 |
| M-FAST SFP-LH/LC EEC | 943 948-001 |

■ Underlying technical standards

| Name | |
|------------------------------------|---|
| CSA C22.2 No. 142 | Canadian National Standard(s) – Process Control Equipment – Industrial Products |
| ISA 12.12.01, CSA C22.2 No. 213 | Nonincendive Electrical Equipment for Use in Class I, Division 2 Hazardous Locations |
| EN 50121-4 | Railway applications – EMC – Emission and immunity of the signalling and telecommunications apparatus (Rail Trackside) |
| EN 55022 | Information technology equipment – Radio disturbance characteristics – Limits and methods of measurement |
| EN 60950-1 | Information technology equipment – Safety – Part 1: General requirements |
| EN 61000-6-2 | Electromagnetic compatibility (EMC) – Part 6-2: Generic standards – Immunity for industrial environments |
| EN 61131-2 | Programmable controllers – Part 2: Equipment requirements and tests |
| FCC 47 CFR Part 15 | Code of Federal Regulations |
| German Lloyd | Classification and Construction Guidelines VI-7-3 Part 1 Ed.2003 |
| IEC/EN 61850-3 | Communication networks and systems in substations – Part 3: General requirements |
| IEEE 1613 | IEEE Standard Environmental and Testing Requirements for Communication Networking Devices in Electric Power Substations |
| IEEE 802.1AB | Station and Media Access Control Connectivity Discovery |
| IEEE 802.1D | MAC Bridges (switching function) |
| IEEE 802.1Q | Virtual LANs (VLANs, MRP, Spanning Tree) |
| IEEE 802.3 | Ethernet |
| UL 61010-1, UL 61010-2-210 | Safety for Control Equipment |
| UL 60950-1 | Safety for Information Technology Equipment |

Table 20: List of technical and industry standards

The device has an approval based on a specific standard or de facto standard only if the approval indicator appears on the housing.

If your device has a shipping approval according to Germanischer Lloyd, you find the approval mark printed on the device label. You will find out whether your device has other shipping approvals on the Hirschmann website under www.hirschmann.com in the product information.

The device generally fulfills the technical and industry standards named in their current versions.

A Further Support

■ Technical Questions

For technical questions, please contact any Hirschmann dealer in your area or Hirschmann directly.

You will find the addresses of our partners on the Internet at
<http://www.hirschmann.com>

Contact our support at
<https://hirschmann-support.belden.eu.com>

You can contact us

in the EMEA region at

- ▶ Tel.: +49 (0)1805 14-1538
- ▶ E-mail: hac.support@belden.com

in the America region at

- ▶ Tel.: +1 (717) 217-2270
- ▶ E-mail: inet-support.us@belden.com

in the Asia-Pacific region at

- ▶ Tel.: +65 6854 9860
- ▶ E-mail: inet-ap@belden.com

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